

## CLAIMS

What is claimed is:

- 5011 A<sup>3</sup>
- 005150-21559950
- 1 1. A method for routing network switching information, comprising:  
2 generating at least one data frame of a second type from at least one  
3 data frame of a first type, wherein the at least one data frame of a second  
4 type comprises switching event information;  
5 transferring and storing the at least one data frame of a second type  
6 among a plurality of network elements using a second network;  
7 performing at least one compare operation among prespecified data  
8 frames of a second type;  
9 generating at least one interrupt signal in response to at least one  
10 detected change resulting from the at least one compare operation; and  
11 controlling information routing in at least one network in response to  
12 the at least one interrupt signal.
  - 1 2. The method of claim 1, wherein generating at least one interrupt  
2 signal comprises:  
3 generating at least one unit interrupt signal in response to the at least  
4 one detected change;  
5 generating at least one memory map in response to the at least one  
6 unit interrupt signal; and  
7 generating at least one massive interrupt signal in response to the at  
8 least one unit interrupt signal.
  - 1 3. The method of claim 2, further comprising distributing the at least  
2 one memory map among the plurality of network elements.

- 1 4. The method of claim 2, wherein the at least one memory map  
2 comprises memory maps among three areas of a random access memory.
- 1 5. The method of claim 1, further comprising:  
2 navigating among a plurality of memory locations using a plurality  
3 of memory maps in response to the at least one interrupt signal;  
4 reading data from the plurality of memory locations relating to the  
5 switching event information; and  
6 evaluating the switching event information.
- 1 6. The method of claim 1, further comprising coupling an output of  
2 each of the plurality of network elements to an input of the plurality of  
3 network elements.
- 1 7. The method of claim 1, wherein the at least one data frame of a first  
2 type comprises a synchronous optical network data frame.
- 1 8. The method of claim 1, wherein the at least one data frame of a  
2 second type comprises approximately 67.5 bytes transferred as a serial bit  
3 stream at a rate of approximately 4.32 megahertz.
- 1 9. The method of claim 8, wherein the at least one data frame of a  
2 second type comprises status bytes and Synchronous Optical Network  
3 (SONET) bytes including K1, K2, E1, and F1 bytes.
- 1 10. The method of claim 1, wherein the second network comprises a 16-  
2 channel bus.
- 1 11. The method of claim 1, wherein the at least one detected change is  
2 an inequality among bits of the at least one data frame of a second type.

1 12. The method of claim 1, further comprising generating a plurality of  
2 control and clock signals.

1 13. The method of claim 1, wherein the storing comprises multiplexing  
2 the at least one data frame of a second type from a plurality of ports into a  
3 memory area of a dual port random access memory.

1 14. The method of claim 1, further comprising receiving the at least one  
2 data frame of a first type from a plurality of network ports distributed  
3 among a plurality of switch cards.

1 15. The method of claim 1, further comprising distributing processing of  
2 switching event information among the plurality of network elements.

1 16. A method of communicating among a plurality of network elements,  
2 comprising:

3 capturing at least one network data frame from at least one network;  
4 generating at least one backplane data frame from the at least one  
5 network data frame, wherein the at least one backplane data frame  
6 comprises switching event information;

7 transferring and storing the at least one backplane data frame among  
8 the plurality of network elements using a backplane network;

9 performing at least one compare operation among at least one  
10 transferred backplane data frame and at least one stored backplane data  
11 frame at prespecified intervals; and

12 generating at least one interrupt signal in response to at least one  
13 detected change in switching event information resulting from the at least  
14 one compare operation.

1 17. The method of claim 16, wherein generating at least one interrupt  
2 signal comprises:

3 generating at least one unit interrupt signal in response to the at least  
4 one detected change;

5 generating at least one memory map in response to the at least one  
6 unit interrupt signal; and

7 generating at least one massive interrupt signal in response to the at  
8 least one unit interrupt signal.

1 18. The method of claim 17, further comprising distributing the at least  
2 one memory map among the plurality of network elements.

1 19. The method of claim 16, further comprising:  
2 navigating among a plurality of memory locations using a plurality  
3 of memory maps in response to the at least one interrupt signal;  
4 reading data from the plurality of memory locations relating to the  
5 switching event information; and  
6 evaluating the switching event information.

1 20. The method of claim 16, further comprising coupling an output of  
2 each of the plurality of network elements to an input of the plurality of  
3 network elements using the backplane network, wherein the backplane  
4 network includes at least one 16-channel bus.

1 21. The method of claim 16, wherein the at least one network data frame  
2 comprises a synchronous optical network data frame, wherein the at least  
3 one backplane data frame comprises approximately 67.5 bytes transferred as  
4 a serial bit stream at a rate of approximately 4.32 megahertz.

1 22. The method of claim 16, wherein the at least one detected change is  
2 an inequality among bits of the at least one network data frame.

1 23. The method of claim 16, wherein the storing comprises multiplexing  
2 the at least one backplane data frame from a plurality of ports into a  
3 memory area of a dual port random access memory.

1 24. The method of claim 16, further comprising receiving the at least  
2 one network data frame from a plurality of network ports distributed among  
3 a plurality of switch cards.

1 25. The method of claim 16, further comprising distributing processing  
2 of switching event information among the plurality of network elements.

1 26. A computer readable medium containing executable instructions  
2 which, when executed in a processing system, cause the processing system  
3 to route network switching event information, comprising:  
4 generating at least one data frame of a second type from at least one  
5 data frame of a first type, wherein the at least one data frame of a second  
6 type comprises switching event information;  
7 transferring and storing the at least one data frame of a second type  
8 among a plurality of network elements using a second network;  
9 performing at least one compare operation among prespecified data  
10 frames of a second type;  
11 generating at least one interrupt signal in response to at least one  
12 detected change resulting from the at least one compare operation; and  
13 controlling information routing in at least one network in response to  
14 the at least one interrupt signal.

1 27. The computer readable medium of claim 26, wherein generating at  
2 least one interrupt signal comprises:  
3 generating at least one unit interrupt signal in response to the at least  
4 one detected change;

5           generating at least one memory map in response to the at least one  
6 unit interrupt signal; and  
7           generating at least one massive interrupt signal in response to the at  
8 least one unit interrupt signal.

1   28.    The computer readable medium of claim 27, further comprising  
2 distributing the at least one memory map among the plurality of network  
3 elements.

1   29.    The computer readable medium of claim 26, further comprising:  
2           navigating among a plurality of memory locations using a plurality  
3 of memory maps in response to the at least one interrupt signal;  
4           reading data from the plurality of memory locations relating to the  
5 switching event information; and  
6           evaluating the switching event information.

1   30.    The computer readable medium of claim 26, further comprising  
2 coupling an output of each of the plurality of network elements to an input  
3 of the plurality of network elements.

1   31.    The computer readable medium of claim 26, wherein the at least one  
2 data frame of a first type is a Synchronous Optical Network (SONET) data  
3 frame, wherein the at least one data frame of a second type comprises  
4 approximately 67.5 bytes comprising status bytes and SONET bytes  
5 including K1, K2, E1, and F1 bytes transferred as a serial bit stream at a rate  
6 of approximately 4.32 megahertz.

1   32.    The computer readable medium of claim 26, wherein the at least one  
2 detected change is an inequality among bits of the at least one data frame of  
3 a second type.

1 33. The computer readable medium of claim 26, wherein the storing  
2 comprises multiplexing the at least one data frame of a second type from a  
3 plurality of ports into a memory area of a dual port random access memory.

1 34. The computer readable medium of claim 26, further comprising  
2 receiving the at least one data frame of a first type from a plurality of  
3 network ports distributed among a plurality of switch cards.

1 35. The computer readable medium of claim 26, further comprising  
2 distributing processing of switching event information among the plurality  
3 of network elements.

1 36. An electromagnetic medium containing executable instructions  
2 which, when executed in a processing system, cause the processing system  
3 to route network switching event information, comprising:  
4 generating at least one data frame of a second type from at least one  
5 data frame of a first type, wherein the at least one data frame of a second  
6 type comprises switching event information;  
7 transferring and storing the at least one data frame of a second type  
8 among a plurality of network elements using a second network;  
9 performing at least one compare operation among prespecified data  
10 frames of a second type;  
11 generating at least one interrupt signal in response to at least one  
12 detected change resulting from the at least one compare operation; and  
13 controlling information routing in at least one network in response to  
14 the at least one interrupt signal.

1 37. The electromagnetic medium of claim 36, wherein generating at  
2 least one interrupt signal comprises:  
3 generating at least one unit interrupt signal in response to the at least  
4 one detected change;

5 generating at least one memory map in response to the at least one  
6 unit interrupt signal; and  
7 generating at least one massive interrupt signal in response to the at  
8 least one unit interrupt signal.

1 38. The electromagnetic medium of claim 36, further comprising:  
2 navigating among a plurality of memory locations using a plurality  
3 of memory maps in response to the at least one interrupt signal;  
4 reading data from the plurality of memory locations relating to the  
5 switching event information; and  
6 evaluating the switching event information.

1 39. The electromagnetic medium of claim 36, further comprising  
2 coupling an output of each of the plurality of network elements to an input  
3 of the plurality of network elements.

1 40. The electromagnetic medium of claim 36, wherein the at least one  
2 data frame of a first type is a Synchronous Optical Network (SONET) data  
3 frame, wherein the at least one data frame of a second type comprises  
4 approximately 67.5 bytes comprising status bytes and SONET bytes  
5 including K1, K2, E1, and F1 bytes transferred as a serial bit stream at a rate  
6 of approximately 4.32 megahertz.

1 41. The electromagnetic medium of claim 36, wherein the at least one  
2 detected change is an inequality among bits of the at least one data frame of  
3 a second type.

1 42. The electromagnetic medium of claim 36, wherein the storing  
2 comprises multiplexing the at least one data frame of a second type from a  
3 plurality of ports into a memory area of a dual port random access memory.



- 1 43. The electromagnetic medium of claim 36, further comprising  
2 receiving the at least one data frame of a first type from a plurality of  
3 network ports distributed among a plurality of switch cards.

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